

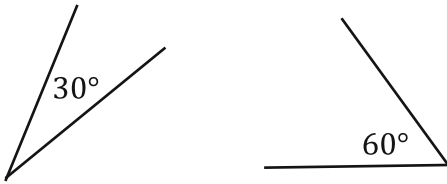
Complementary and Supplementary Angles

A pair of pairs and another pair...

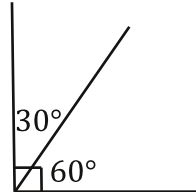
No, not the delicious sweet fruit your mother made you eat when you were a baby. These pairs are special because they add to convenient numbers, and if you learn them and look for them, they can make solving much harder problems a piece of cake. Or pear cobbler, if you're in the mood. Let's look at them.

Complementary Angles are two angles that add to 90° .

They can be separated, like this...



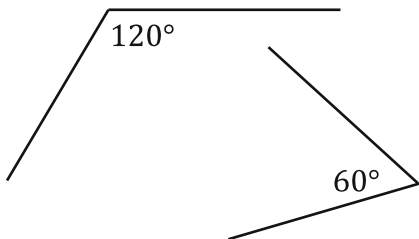
Or adjacent, (joined at the hip) like this...



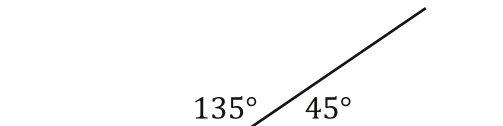
In the second example, the right angle box is a dead giveaway that these are complementary angles. When you're solving problems later on look for it! You will know that the two angles add to 90° . More on that later. You should know that the ones joined at the hip are called adjacent.

Supplementary Angles are two angles that add to 180° .

They can be separated, like this...



Or adjacent, (joined at the hip) like this...

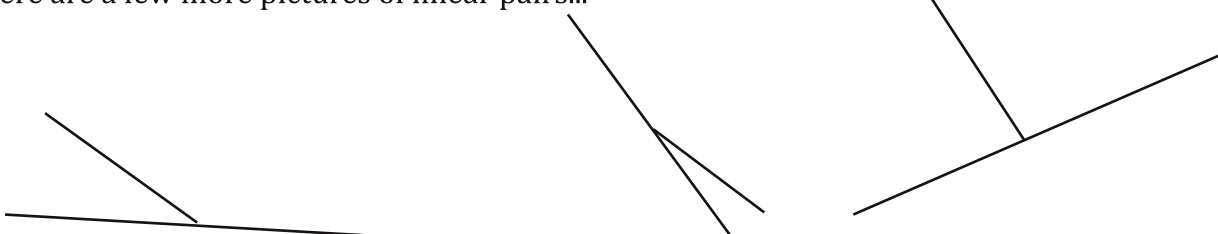


It should be noted that the word supplementary contains most of the word "supplement" which means an addition, like a vitamin supplement. You're not getting enough vitamins because you don't like pears and prefer hotdogs and potato chips, so you have to supplement your vitamins by taking a vitamin supplement. The supplement adds to the small amount contained in such nutritionally poor but tasty treats so you don't get scurvy or osteoporosis. So, supplement means more.

Supplementary angles add to a bigger amount 180° not 90° . Got it?

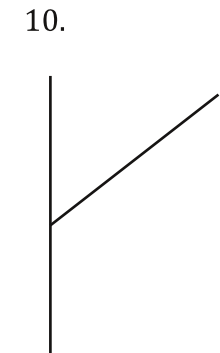
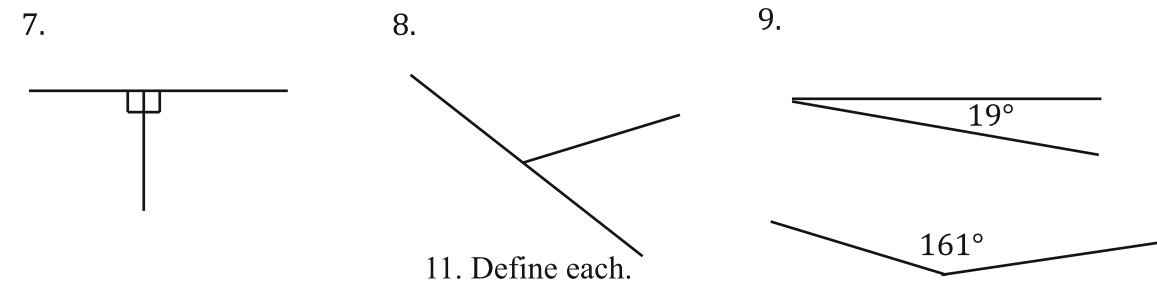
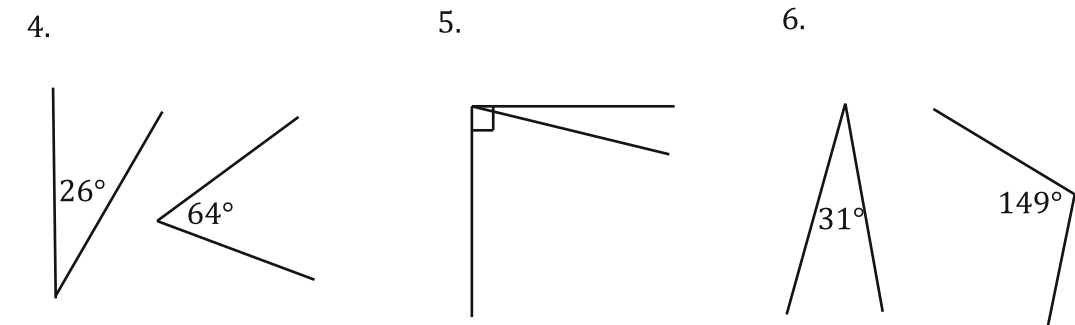
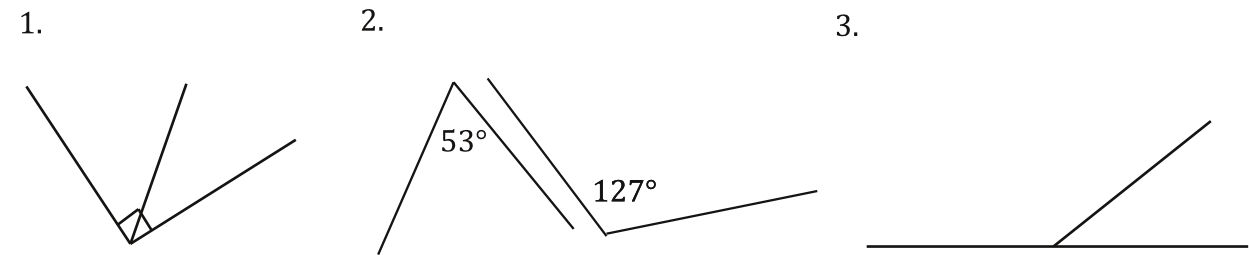
Linear Pair. This is just a fancy name for supplementary angles that are joined at the hip; you will see these all over the place in the rest of Geometry. It is critical that you know that a linear pair is two angles that add to 180° . Fortunately, this is easy to remember because a line (The word linear has the word line in it, see? It also means "like a line.") is just a straight angle that is 180° , and a pair is two. So, it's a pair of angles that make a line, or 180° .

Here are a few more pictures of linear pairs...



Directions: For each figure below bubble "A" if the angles are complementary but NOT adjacent, "B" if they are complementary AND adjacent, "C" if they are supplementary but NOT adjacent, or "D" if they are a linear pair (supplementary AND adjacent).

If you need help refer to all the lovely text you skipped on the previous page. j/k



11. Define each.

Complementary Angles: _____

Supplementary Angles: _____

Linear Pair: _____

Bubble the correct answer choice from each item above.

#1.	#2.	#3.	#4.	#5.	#6.	#7.	#8.	#9.	#10.
<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.	<input type="radio"/> A.
<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.	<input type="radio"/> B.
<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.	<input type="radio"/> C.
<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.	<input type="radio"/> D.

For each, find the measure of the missing angle.

12. Step 1. Write the formula.

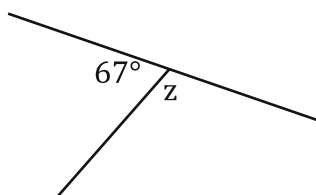
$$x + 33^\circ = 90^\circ$$

Step 2. Solve.

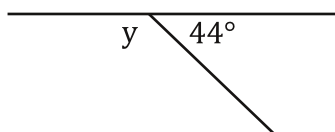
$$\begin{array}{r} x + 33^\circ = 90^\circ \\ -33^\circ -33^\circ \\ \hline x = 57^\circ \end{array}$$

Yep, it's that easy!

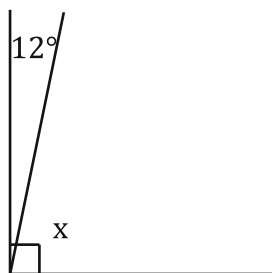
14. Don't forget to keep writing all the steps!



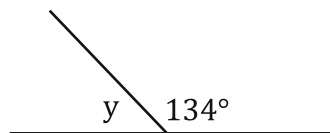
16.



18.



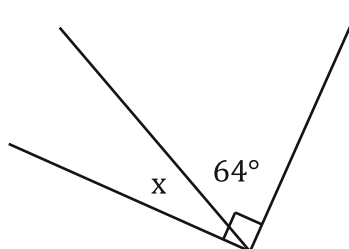
13.



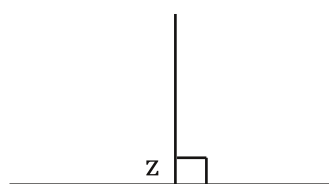
Step 1. Write the formula.

Step 2. Solve.

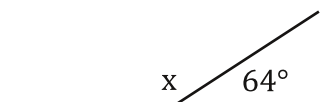
15.



17.



19.

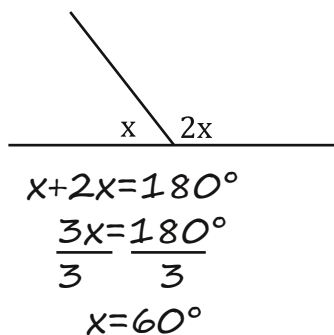


Bubble all the correct answers from above. Don't bubble incorrect answers.

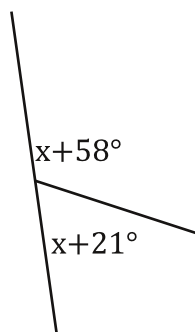
☐ 78° ☐ 136° ☐ 45° ☐ 113° ☐ 57° ☐ 46° ☐ 116° ☐ 26° ☐ 23° ☐ 102° ☐ 0° ☐ 46° ☐ 154° ☐ 90°

For each find the value of the variable. Show all work.

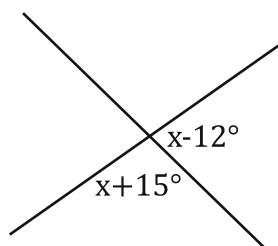
20.



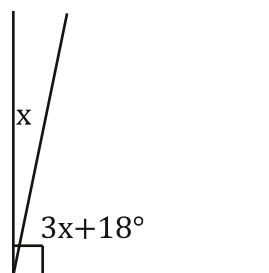
22.



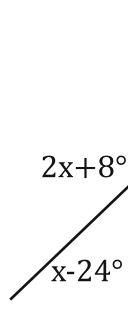
24.



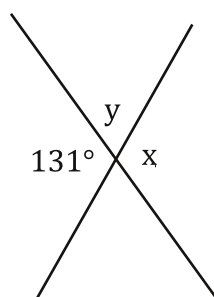
21.



23.



25. Find y, then find x...



26. What do you notice about the value of x in #25?

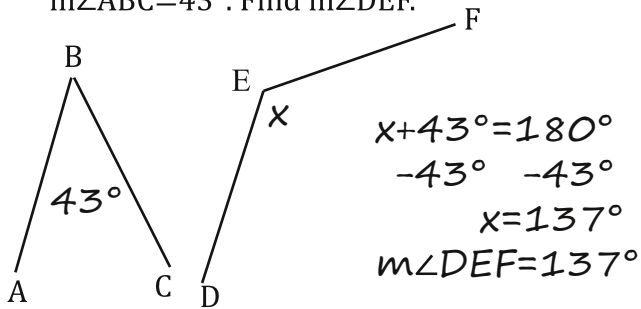
Bubble all the correct answers from above. Don't bubble incorrect answers.

☐ 40.5°
 ☐ 60°
 ☐ 50.5°
 ☐ 18°
 ☐ 65.3°
 ☐ 88.5°
 ☐ 49°
 ☐ 49.3°
 ☐ 131°
 ☐ 76.5°

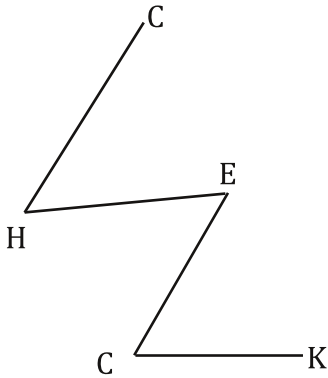
Find the indicated angle measure. If the problem contains a linear pair, write "linear pair" as well.

27. $\angle ABC$ is supplementary to $\angle DEF$

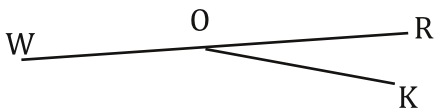
$m\angle ABC = 43^\circ$. Find $m\angle DEF$.



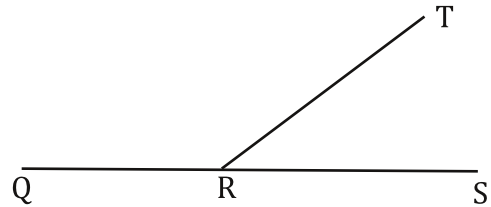
29. $\angle H$ is complementary to $\angle C$ $m\angle C = 59^\circ$. Find $m\angle H$.



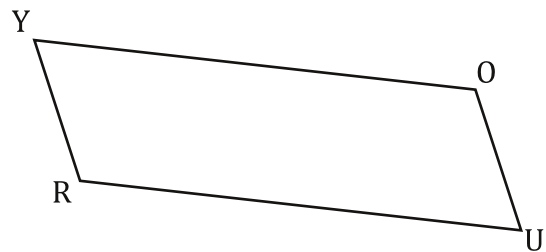
31. $m\angle WOK$ is 27 more than three times $m\angle ROK$. Find $m\angle ROK$.



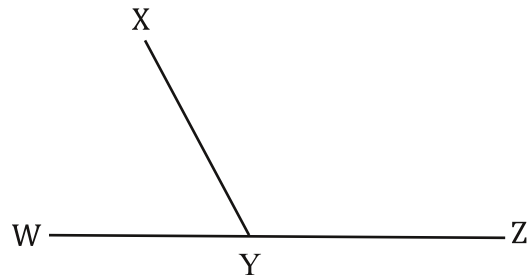
28. $m\angle QRT = 143^\circ$. Find $m\angle TSR$.



30. $\angle O$ is supplementary to $\angle U$, $m\angle U = 78^\circ$. Find $m\angle O$.



32. $m\angle XYZ$ is 11 more than two times $m\angle WYX$. Find $m\angle XYZ$.



33. Secret Message: _____

Bubble all the correct answers from above. Don't bubble incorrect answers.

☐ 47° ☐ 121° ☐ 76.5° ☐ 153° ☐ 56.3° ☐ 84.5° ☐ 31° ☐ 137° ☐ 37° ☐ 102°